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NUTRACEUTICALS

THE SCIENCE BEHIND ISO-SMOOTH™

The Truth about Protein Supplementation

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THE SCIENCE BEHIND ISO-SMOOTH™

For many years, it has been widely understood and well documented that protein supplementation has real, significant, and meaningful positive effects on immune health, mental health, metabolic health, and particularly on muscle health. Most notably are the effects on muscle mass, muscle strength and muscle quality in people of all ages, genders and activity levels. Protein supplementation is easily the highest recommended supplement for most people to take, and rightly so. In the interest of optimizing muscle health, the largest meta-analysis to date on the effects of protein supplementation concluded that dietary protein supplementation is additive to resistance exercise training in regards to increasing muscle strength and lean mass. In fact, for resistance-trained individuals, the requirement for dietary protein supplementation is even higher in order to maximize muscle mass accretion.

While the reference daily intake (RDI) of protein for the US and Canada still remains at 0.8 g/kg of bodyweight (BW), the entire academic community of experts in protein metabolism highly suggest consuming protein quantities far greater than the RDI. The research is very clear that 0.8 g/kg BW, as indicated by the RDI, is what is required to prevent muscle wasting but is insufficient for the growth of added muscle. The data indicate that protein supplementation is not only beneficial but necessary to optimize resistance exercise training adaptations in muscle mass and strength. The recent meta-regression determined that there continues to be additional added benefit for protein intakes up to at least a level of 1.6 g/kg BW, twice the amount recommended by the RDI. The authors further conclude that given the upper 95% confidence limit is 2.2 g/kg BW, the recommendation is to consume 2.2 g/kg BW for those seeking to maximize resistance training-induced gains in muscle mass.

A meta-analysis of all longitudinal protein supplement studies of various protein amounts determined that the average protein supplement study elicited a 9% increase in muscle strength and a 27% increase in muscle size over the effect of resistance training alone. However, with the proper techniques, protein dosages, timing and protein quality, the benefits can only increase from there.

It is true that how protein is distributed throughout the day influences how it contributes to muscle growth versus how it is used in other metabolic processes. For instance, consuming a high quality protein supplement after a long fast (for breakfast for instance) has a great anabolic potential in overcoming the catabolic effects of fasting. Additionally, protein ingestion post-exercise has an even greater anabolic potential **(Figure1)**. It is also true that as we age, we need increasingly more protein to stimulate muscle growth because we eventually become less sensitized to protein ingestion with time. There is also good evidence that in order to maximize protein utilization, the total daily protein intake should be spread out into highly frequent time points throughout the day rather than consuming it all at one meal. Finally, protein source matters when it comes to efficiency of muscle growth. The research is very clear that whey protein is superior to soy protein, casein protein, egg protein or any vegan protein in terms of its

speed of absorption, delivery into muscle and consequently the stimulation of muscle growth through protein synthesis.

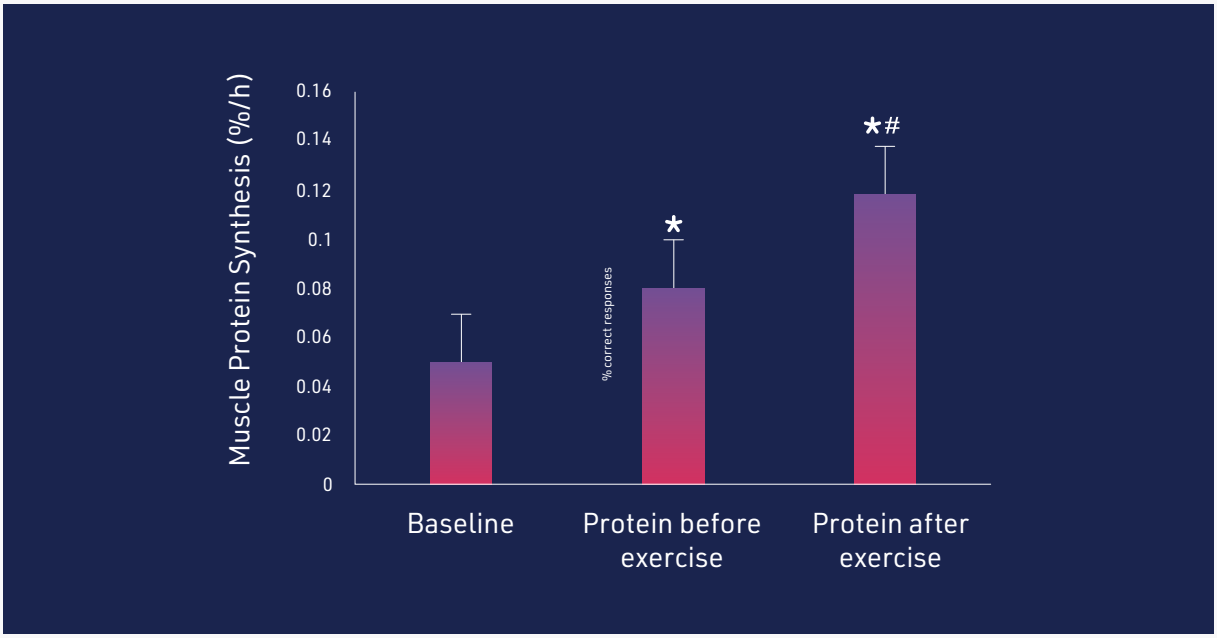

Figure 1. Protein synthetic response to a single dose of protein dependent on timing compared to baseline rate of protein synthesis. *p<0.05 vs placebo, #p<0.05 vs protein before exercise.

With the plethora of research conducted over the last several decades, there is very little to debate that protein supplementation has a lot of merit and ergogenic benefit. While a lot of research and attention has been drawn to the differing protein sources, how to space protein ingestion throughout the day, and with what dosage specific to your age, and body size, in contrast, very little attention has focused on the differences in whey protein quality. Since protein quality is all too often swept under the rug, protein quality is not something that is widely considered when choosing a whey protein supplement. When you consider the quality of protein from Iso-Smooth™ that will all change!

The Difference Iso-Smooth™ Makes Compared to Other Protein Supplements

The first thing to note about Iso-Smooth™ is that the protein comes from 100% whey protein. As previously eluded, whey protein is the most effective protein source for muscle growth when directly compared to other protein sources. Whey protein empties rapidly from the stomach as intact proteins with minimal digestion and transits to the duodenum for continued digestion and rapid absorption into the jejunum, a much larger intestinal span than other protein sources. This fast rate of digestion and absorption results

in a rapid increase in plasma amino acid concentration, stimulates an immediate amino acid transport into the muscle and robust increase in muscle protein synthesis. In contrast, micellar casein forms clots within the stomach, which slows their exit thus slows the absorption into the bloodstream. This results in a lower peak amino acid concentration thus a smaller increase in protein synthesis.

YOU SHOULD KNOW

Iso-Smooth™ is no ordinary protein. With over 25 years of combined experience, it's safe to say the Blue Star Nutraceuticals® R&D team knows a thing or two about making great flavors. That's why the all new Iso-Smooth™ flavors aren't just good – they're "unbelievable", "outstanding", "extraordinary", and now, award-winning.

Difference Between Wheys

The preparation of whey protein comes from cow's milk where 80% of the protein are casein proteins and the remaining 20% is the whey portion. Once the casein fraction is removed and only the whey portion remains, the whey portion of the milk naturally contains various proteins, peptides, amino acids, lactose, minerals, vitamins and varying quantities of lipids. At this point most whey protein supplements on the market concentrate the raw whey protein fraction to yield anywhere between 34% to less than 90% protein. If you read the label of another whey protein product, most often, you'll see the ingredient listed as "whey protein concentrate" or if in a blend, you'll see whey protein concentrate listed before any other whey protein ingredient. If this is what you see, then the purity of the protein is likely fairly low and will never exceed 90% protein. The concentration process will still maintain a variable amount of lactose.

Whey protein 'isolate' is a step ahead 'concentrate'. This is because the isolation process can yield protein purities beyond 90%. However, there is still some variation on how whey protein can be isolated. Whey protein isolate is typically produced through a method called membrane filtration which is a combination of microfiltration and ultrafiltration. This process can select and retain molecules based on size separating the proteins from the non-protein fragments, eliminating milk fats and sugars from the end product. As impressive as this highly pure protein preparation is, it can still be better. The limitation to this method is that it is not selective of what proteins it retains and which it removes and thus can retain significant levels of less complete amino acid profile proteins.

Iso-Smooth™ is in fact a 100% whey protein "isolate" product, but the purification of this protein ingredient is next level!

BiPro®

100% of the whey protein isolate found in Iso-Smooth™ comes from a branded whey protein source called BiPro®. BiPro® is a whey protein isolate that has been purified through a selective ion exchange process, resulting in an astonishing purity level of 97.6%, the purest on the market. This means Iso-Smooth™ is virtually free of every other milk impurity such as lactose, fat, and other less desirable and incomplete proteins. However, purity is only one aspect that makes Iso-Smooth™ the most elite protein on the market.

By virtue of their essential amino acids, the biological value of whey protein is high compared with that of other dietary proteins. Protein quality not only refers to its purity but also the ability of a particular protein to provide essential amino acids. What makes whey protein so superior to other sources of protein is the composition of the protein components. The two major and most effective protein fractions within a whey protein are called β-lactoglobulin and α-lactalbumin. The β-lactoglobulin component is what gives whey protein its high leucine and overall BCAA content, driving the stimulation of protein synthesis and muscle growth. α-lactalbumin has higher tryptophan and cysteine levels, which positively influences several other protein benefits such as serotonin-linked brain functions, sleep quality, immune function and mood.

One of the unique benefits of the selective ion exchange process is being able to specifically select which desirable proteins. BiPro® is a unique, natural and pure dairy protein comprised of between 61-70% β-lactoglobulin and 23-31% α-lactalbumin, significantly higher than the typical whey protein composition consisting of only 52% β-lactoglobulin and 17% α-lactalbumin along with other less desirable proteins **(Figure 2)**.

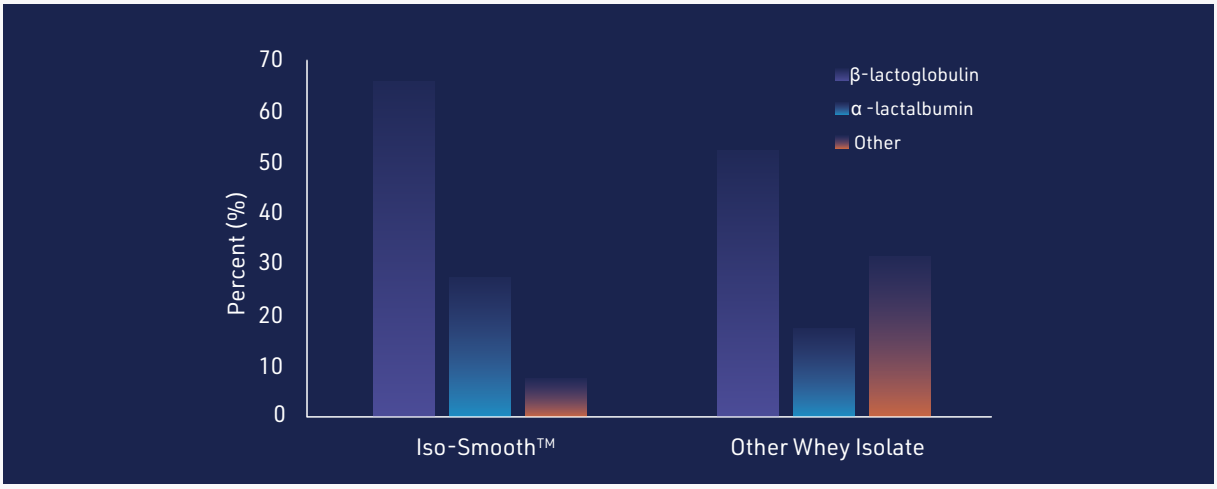

Figure 2. Composition of competing whey protein isolates.

CONCLUSION

The overall impact that protein supplementation can have on a wide spectrum of human health is very clear. One of which is the growth or maintenance of muscle mass. For those who are already engaged in resistance-training, a protein supplement is even more beneficial. In order to maximize the muscle growth potential, three things related to protein need to be considered. 1) Consume a sufficient amount of protein. 2) Spread the protein consumption throughout the day to efficiently direct that protein into muscle cells. 3) Focus on consuming only high-quality sources of protein. This third consideration is crucial because protein is not all equal. A substantial inclusion of the essential amino acids, high in BCAAs and particularly robust in leucine is optimal to get the highest anabolic response from a protein supplement. A whey protein isolate coming purely from BiPro®, as is the case in Iso-Smooth,™ is the ultimate in protein quality. After accounting for its rich flavor profile making it one of the most delicious protein isolate products on the market, the protein content in the finished product is still 91% protein, one of, if not the highest in the industry. Furthermore, the unique isolation process used by BiPro® selects for only the highest functionally active whey proteins and leaves the others behind. For this reason, Iso-Smooth™ has the highest proportion of leucine, the BCAAs and all of the essential amino acids compared to other protein products on the market.

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Dr. David Gundermann is an award winning nutritional product development scientist, clinical researcher, and known expert in muscle health and metabolism. He developed his passion for health & fitness at a very early age growing up in a family of accomplished competitive athletes.

As Director of Research and Development at Blue Star Nutraceuticals®, he leads all efforts concerning product formulation, key ingredient research, flavor science, long-term scientific assessment, and proprietary development.

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